Amendments to the Claims

1. (Currently Amended) A method for processing a surface of a workpiece comprising:

selecting a set of reaction parameters;

loading the workpiece into a reaction chamber;

pumping on said reaction chamber until a pressure according to said selected reaction parameters is achieved;

translating the workpiece at a constant rate across said chamber according to said selected reaction parameters;

flowing simultaneously into said chamber a precursor gas, a purge gas, and an input gas according to said selected reaction parameters;

evacuating said purge gas and any gases/residuals in vicinity of said purge gas to prevent mixing of the precursor and input gases while said precursor gas and said input gas are simultaneously provided; and

delivering a beam of electromagnetic radiation according to said selected reaction parameters into the flow of said input gas to produce a high flux of point of use generated reactive gas species which reacts with a surface reactant formed from said precursor gas impinging on the surface of the workpiece at selected locations.

2. (Original) The method of claim 1 further comprises flowing into said chamber a transmission gas.

3. - 4. (Cancelled)

5. (Currently Amended) The method of claim 14 further comprises checking formation from a reaction with said surface reactant and said reactive gas species of ~~a~~said monolayer of ~~a~~said material on the surface of the workpiece for completeness according to said selected reaction parameters.

6. (Original) The method of claim 1 further comprises purging completely said chamber and removing the workpiece from said chamber after completion of said processing according to said selected reaction parameters.

7. (Original) The method of claim 1 further comprises directing said beam through a window of said chamber.

8. (Original) The method of claim 1 further comprises causing relative motion between the workpiece and said beam.

9. - 10. (Cancelled)

11. (Original) The method of claim 1 wherein the workpiece comprises a semiconductive substrate.

12. (Currently Amended) An atomic layer deposition method for forming monolayers on a surface of a substrate, comprising:

exposing the surface of the substrate to a precursor gas to form a surface reactant thereon;

providing an input gas above the surface of the substrate simultaneously with said precursor gas;

preventing the mixture of said precursor gas and said input gas with a purge gas while said precursor gas and said input gas are simultaneously provided;

directing a beam of electromagnetic radiation into said input gas to produce a high flux of generated reactive gas species; and

reacting said generated reactive gas species with said surface reactant to form at least a monolayer on the surface of the substrate.

13. - 17. (Cancelled)

18. (Original) The method of claim 12 wherein preventing the mixture of said precursor gas and said input gas with said purge gas is accomplished by simultaneously pumping and evacuating said purge gas.

19. (Original) The method of claim 12 wherein said reactive gas species is generated a distance between about 2 millimeters to about 4 millimeters above the surface of the substrate.

20. (Cancelled)

21. (Currently Amended) An atomic layer deposition method for forming monolayers on a surface of a substrate, comprising:

providing the substrate to a chamber having a gaseous atmosphere containing a transmission gas that is substantially nonattenuating to preselected wavelengths of electromagnetic radiation;

exposing the surface of the substrate to a precursor gas to form a surface reactant;

providing an input gas over the surface of the substrate simultaneously with said precursor gas;

preventing mixture of said precursor gas and said input gas with a purge gas while said precursor gas and said input gas are simultaneously provided;

directing a beam of electromagnetic radiation into said gaseous atmosphere, said beam converging said input gas in close proximity to the surface of the substrate, but spaced a finite distance therefrom, to dissociate said input gas into a high flux of generated reactive gas species; and

reacting said generated reactive gas species with said surface reactant to form at least a monolayer on at least a portion of the surface of the substrate.

22. - 23. (Cancelled)

24. (Currently Amended) The method of claim 2122 further comprises causing relative motion between the surface of the substrate, ~~a~~said dispenser unit providing said precursor gas, said input gas, and said purge gas each as a separate flow, and said beam to cause said dispenser unit and said beam to sweep over the surface of the substrate.

25. (Original) The method of claim 21 further comprises directing said beam of electromagnetic radiation from a laser source through a transparent window of said chamber into said gaseous atmosphere.

26. (Cancelled)

27. (Original) The method of claim 21 further comprises causing relative motion between the surface of the substrate and said beam to cause said beam to sweep over the surface of said substrate.

28. - 32.(Cancelled)

33. (Original) The method of claim 21 further comprises controlling the energy characteristics of said beam to match absorption characteristics of said input gas to produce said high flux of said generated reactive gas species.

34. - 37. (Cancelled)

38. (Original) The method of claim 21 wherein said input gas is provided as a gas layer flown over the surface of the substrate and having a thickness that is at least large enough to accommodate said finite distance.

39. (Original) The method of claim 21 wherein said finite distance is selected from the about 2 millimeters to about 4 millimeters above the surface of the workpiece.

40. (Cancelled)

41. (Currently Amended) An atomic layer deposition method for forming monolayers on a surface of a substrate, comprising:

loading the substrate into a reaction chamber;

pumping on said reaction chamber until a preselected pressure is achieved;

flowing simultaneously into said reaction chamber a precursor gas, a purge gas, and an input gas;

forming a surface reactant by permitting said precursor gas to react with the surface of the substrate at selected locations;

evacuating said purge gas and any gases/residuals in vicinity of said purge gas to prevent mixing of the precursor and input gases while said precursor gas and said input gas are

simultaneously flowed into said reaction chamber;

delivering a beam of electromagnetic radiation into said input gas in close proximity to the surface of the substrate, but spaced a finite distance therefrom, to dissociate said input gas into a high flux of point of use generated reactive gas species; and

reacting said generated reactive gas with said surface reactant to form at least a monolayer at said selected locations.

42. (Original) The method of claim 41 further comprises flowing into said reaction chamber a transmission gas.

43. - 44. (Cancelled)

45. (Original) The method of claim 41 further comprises checking formation of said monolayer on the surface of the substrate for completeness.

46. (Original) The method of claim 41 further comprises directing said beam through a window of said reaction chamber.

47. (Original) The method of claim 41 further comprises causing relative motion between the substrate and said beam.

48. (Cancelled)

49. (Currently Amended) The method of claim 4148 further comprises causing relative motion between the substrate, said beam, and ~~asaid~~ dispenser unit providing said precursor gas, said input gas, and said purge gas.

50. - 52. (Cancelled)

53. (Original) The method of claim 41 further comprises controlling the energy characteristics of said beam to match absorption characteristics of said input gas to produce said high flux of said generated reactive gas species.

54. - 58. (Cancelled)

59. (Currently Amended) An atomic layer deposition method for forming a monolayer on a surface of a substrate, comprising:

causing relative motion between the substrate, a dispenser unit, and a beam of electromagnetic radiation;

exposing the surface of the substrate to a precursor gas flowing from said dispenser unit to form a surface reactant thereon;

providing an input gas flowing from said dispensing unit above the surface of the

substrate simultaneously with said precursor gas;

providing a purge gas flowing from said dispensing unit while simultaneously pumping out at least said purge gas also with said dispensing unit to prevent mixing of said precursor gas and said input gas by creating a pump/purge barrier therebetween;

generating a high flux of reactive gas species from said input gas with said beam of electromagnetic radiation; and

reacting said reactive gas species with said surface reactant to form a monolayer on at least a portion of the surface of the substrate.

60.- 78. (Cancelled)